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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,602	08/19/2003	Kenneth Schofield	MAG04 P-1087	5065
28101 7590 06/19/2009 VAN DYKE, GARDNER, LINN & BURKHART, LLP SUITE 207 2851 CHARLEVOIX DRIVE, S.E. GRAND RAPIDS, MI 49546				
EXAMINER CZEKAJ, DAVID J				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/643,602

Applicant(s)

SCHOFIELD ET AL.

Examiner

DAVID CZEKAJ

Art Unit

2621

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50-52, 56, 58, 62, 67 and 92-109 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50-52, 56, 58, 62, 67 and 92-109 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

On pages 2-5, applicant argues that the combination of Secor, Fukuhara, and Choi fail to disclose an image processor that produces a synthesized image by pixel group compensation, image morphing or image warping compensation, cameras with overlapping fields of view, and producing synthesized image on a single display screen that is viewable by a driver of the vehicle. While the applicant's points are understood, the examiner respectfully disagrees. See for example Secor figures 2 and 4. There Secor illustrates a first camera 22 which will have an overlapping field of view with camera 34. While camera 34 is pointed in a sidewardly direction, cameras 22 and 34 will still have overlapping fields of view. Fukuhara illustrates in figures 4 and 8, a synthesizing circuit to produce a synthesized output from the images received from the cameras 22 and 23. Since the synthesized output produces a single display from multiple cameras, as seen in figure 8, pixel group compensation, image morphing, or image warping must be performed. Choi illustrates in figure 4, a single display screen viewable by a driver. Hence, the combination of Secor, Fukuhara, and Choi disclose the limitations as claimed. Therefore the rejection has been maintained.

On page 5, applicant argues that there is no motivation to combine Choi with Fukuhara and Secor. While the applicant's points are understood, the examiner respectfully disagrees. Choi illustrates in figure 1, a vehicle camera processing system with a subsequent display. Since all references are within the same field of endeavor

(vehicle camera processing systems), and proper motivation has been stated, the combination is deemed proper. Therefore the rejection has been maintained.

On page 7, applicant argues that Secor teaches away from the present invention. While the applicant's points are understood, the examiner respectfully disagrees. As seen in the above arguments, Secor discloses cameras with overlapping fields of view. Furthermore, under KSR, all the elements are known, could have been combined without any change of function, and would give predictable results. Thus, this is simply a modification of equivalent parts, not a teaching away. Therefore the rejection has been maintained.

On page 8, applicant argues that Secor, Fukuhara, and Choi teach away from a vision system. While the applicant's points are understood, the examiner respectfully disagrees. As indicated in the above arguments, the combination of Secor, Fukuhara, and Choi teach a vehicle image system. Hence, the combination does not teach away from the instant application. Therefore the rejection has been maintained.

On page 10, applicant argues that Tuck teaches away from the present invention. While the applicant's points are understood, the examiner respectfully disagrees. While Tuck illustrates multiple displays in figure 4, Tuck discloses in column 4, lines 55-67, that the operator will view the scene as being from a single wide angle view. Hence, the multiple displays function as a single display unit. Furthermore, under KSR, all the elements are known, could have been combined without any change of function, and would give predictable results. Thus, this is simply a modification of equivalent parts, not a teaching away. Therefore the rejection has been maintained.

On page 11, applicant argues that Kishi fails to disclose a graphic overlay that enhances the drivers understanding of what is in the area adjacent the vehicle enabled when the vehicle's gear is selected to be in reverse. While the applicant's points are understood, the examiner respectfully disagrees. See for example Kishi column 1, lines 20-29. There Kishi discloses that when a switch is activated (such as a switch to reverse), displaying an overlay comprising a distance display line to provide depth perception of the rear of the vehicle. Since the information is indicative of the rear of the vehicle, the examiner notes the switch must be done when the car is in reverse. Furthermore, the distance information provided via the overlay would enhance the drivers understanding of the area to the rear of the vehicle. Therefore the rejection has been maintained.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 50, 52, 56, 58, 62, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor (5289321) in view of Fukuhara (4653316) in further view of Choi (5121200).

Regarding claim 50, Secor discloses an apparatus that relates to vehicle cameras (Secor: column 1, lines 7-10). This apparatus comprises "a vehicle equipped with at least two image capture devices for capturing an image external of the vehicle,

the devices having overlapping fields of view" (Secor: figure 4; column 4, lines 13-22, wherein the side camera 34 and side camera (22 or 20) have an overlapping field of view) and "the vehicle is equipped with a display screen displaying the image, being viewable by a driver of the vehicle when the driver is normally operating the vehicle" (Secor: column 4, lines 28-36). However, this apparatus lacks the synthesizing and single display as claimed. Fukuhara teaches that prior art monitoring systems have impaired synchronism and the analysis of the entire data cannot be made adequately and readily (Fukuhara: column 1, lines 15-21). To help alleviate this problem, Fukuhara discloses "an image processor producing a synthesized image from the outputs of the image capture devices by at least one of: luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation, or image warping compensation" (Fukuhara: figures 4 and 8; column 4, lines 13-26). Choi teaches that there is a need in prior art vehicle camera systems to better help protect the camera system (Choi: column 1, lines 52-55). To help alleviate this problem, Choi discloses "an image displayed on a single display screen viewable by a driver" (Choi: figure 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Secor and add the processing taught by Fukuhara and Choi in order to obtain an apparatus that provides data more readily.

Regarding claim 52, Secor discloses "one of the two image capture devices have their fields of view in a direction generally rearward with respect to the vehicle"" (Secor: figure 2).

Regarding claim 56, although not disclosed, it would have been obvious to use CMOS imaging arrays (Official Notice). Doing so would have been obvious in order to capture high quality images.

Regarding claim 58, although not disclosed, it would have been obvious for the display screen to comprise a cathode ray tube (Official Notice). Doing so would have been obvious in order to provide a high quality display for the captured images.

Regarding claim 62, Secor discloses "a display screen viewable by an occupant of the vehicle wherein the screen is one of positioned within the field of view of the driver" (Secor: column 4, lines 28-35).

Regarding claim 67, note the examiners rejection for claim 50.

3. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Secor (5289321) in view of Fukuhara (4653316) in further view of Choi (5121200) in further view of Tuck (4772942).

Regarding claim 51, note the examiners rejection for claim 50 and in addition, claim 51 differs from claim 50 in that claim 50 further requires arranging the images in the same orientation. Tuck teaches that there is a need in the art for the obviation of correction of distortion (Tuck: column 1, lines 40-45). To help alleviate this, Tuck discloses "the synthesized image comprises at least two image portions arranged on the screen in the same orientation as the locations of the capture devices wherein the image portions are reverse row sequenced" (Tuck: figure 4; column 4, lines 60-67, wherein reversed row processing is a well know technique when synthesizing image data). Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to implement the processing taught by Tuck in order to obtain an apparatus that eliminates the distortion of an image.

4. Claims 92-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor (5289321) in view of Tuck (4772942) in further view of Choi (5121200).

Regarding claim 92, Secor discloses an apparatus that relates to vehicle cameras (Secor: column 1, lines 7-10). This apparatus comprises "at least three image capture devices mounted to the vehicle and directed rearwardly with respect to the direction of travel" (Secor: figure 2; column 3, lines 45-60), "at least two cameras being side image capture devices mounted on opposite sides of the vehicle and one image device being a center image mounted between the two side image devices" (Secor: figure 2; column 3, lines 45-55) and "displaying an image on a display screen of the vehicle that is viewable by a driver of the vehicle when the driver is normally operating the vehicle" (Secor: column 4, lines 28-36). However, this apparatus lacks the synthesized image, non-parallel axes, and single display screen as claimed. Tuck teaches that there is a need in the art for the obviation of correction of distortion (Tuck: column 1, lines 40-45). To help alleviate this, Tuck discloses "displaying a composite image synthesized from outputs of the capture device, the displayed image including an image portion from each of the capture devices" (Tuck: figures 3 and 4) and "the capture devices are aimed along non-parallel axes" (Tuck: figure 3). Choi teaches that there is a need in prior art vehicle camera systems to better help protect the camera system (Choi: column 1, lines 52-55). To help alleviate this problem, Choi discloses "an image displayed on a single display screen viewable by a driver" (Choi: figure 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Secor, add the processing taught by Tuck, and add the display screen taught by Choi in order to obtain an apparatus that eliminates the distortion of an image.

Regarding claim 93, Secor discloses "one of side image capture devices images a side blind spot and the other of the two image capture devices images a side blind spot on the respective side of the vehicle, wherein the center image capture device mounted images a rear blind spot at the rear of the vehicle" (Secor: figure 2).

Regarding claim 94, Secor discloses "at least one of: the center image capture device has a horizontal field of view that is generally symmetrical about the longitudinal axis of the vehicle" (Secor: figure 2; column 3, lines 45-55).

Regarding claim 95, Tuck discloses "one of: composite image approximates a view from a single location" (Tuck: figure 4; column 4, lines 63-67, wherein the composite image indicates a view from a single location).

Regarding claim 96, Secor in view of Tuck disclose "the composite image provides the driver a sense of perspective in order to enhance the drivers ability to maneuver rearwardly" (Secor: figure 2; Tuck: column 4, lines 40-65).

Regarding claim 97, Tuck discloses "a graphic overlay superimposed on the composite image" (Tuck: column 5, lines 20-22).

Regarding claim 98, note the examiners rejection for claim 56.

Regarding claim 99, note the examiners rejection for claims 92, 97, and 98.

5. Claims 100-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secor (5289321) in view of Tuck (4772942) in further view of Choi (5121200) in further view of Kishi et al. (5414461), (hereinafter referred to as "Kishi").

Regarding claim 100, note the examiners rejection for claim 92, and in addition, claim 100 differs from claim 92 in that claim 100 further requires the graphic to be overlayed when the vehicle is in reverse. Kishi teaches that it is well known that when a switch is activated (such as a switch to reverse), displaying a graphic on a screen (Kishi: column 1, lines 20-29. Hence, the combination of Kishi with Secor and Tuck teach overlaying the graphic when the vehicle is in reverse). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the graphic overlay taught by Kishi in order to provide a way to only display graphics when needed.

Regarding claim 101, Secor discloses "one of: the single location is forward of the drive with respect to the direction of travel" (Secor: figure 2, wherein when the driver is in reverse, the forward direction would be to the rear of the vehicle).

Regarding claim 102, note the examiners rejection for claim 92.

Regarding claim 103, although not disclosed, it would have been obvious to vertically compress the image (Official Notice). Doing so would have been obvious in order to reduce that data size of the overall image).

Regarding claim 104, note the examiners rejection for claim 56.

Regarding claim 105, note the examiners rejections for claims 50, 93, and 100.

Regarding claims 106-107, although not disclosed, it would have been obvious

for the overlay to indicate a function of direction of travel and speed or distance (Official Notice). Doing so would have been obvious in order to better help give information to a driver when reversing the vehicle.

Regarding claim 108, note the examiners rejection for claim 101.

Regarding claim 109, note the examiners rejection for claim 92, and in addition Kishi discloses "image morphing/warping" (Kishi: figure s3-6, wherein the use of mirrors indicate morphing/warping).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID CZEKAJ whose telephone number is (571)272-7327. The examiner can normally be reached on Mon-Thurs and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dave Czekaj/
Primary Examiner, Art Unit 2621